

Publication

**EP 0952490 A3 19991208**

Application

**EP 99108057 A 19990423**

Priority

- JP 12952398 A 19980423
- JP 11341399 A 19990421

Abstract (en)

[origin: EP0952490A2] A lens barrel (4) includes an optical element (2), for example, a binary-type diffractive element having a light-transmissive surface which is deformed by own weight thereof and/or by being supported, and a plurality of protrusive parts (6) which support the optical element. The plurality of protrusive parts are disposed in such a way as to enable the light-transmissive surface of the optical element to be deformed symmetrically with respect to a plane which includes an optical axis.

IPC 1-7

**G03F 7/20**; G03F 9/00; G02B 7/00; G02B 7/02

IPC 8 full level

**G02B 7/00** (2006.01); **G02B 7/02** (2006.01); **G02B 27/00** (2006.01); **G03B 21/00** (2006.01); **G03F 7/20** (2006.01); **H01L 21/027** (2006.01)

CPC (source: EP US)

**G02B 7/02** (2013.01 - EP US); **G02B 27/0043** (2013.01 - EP US); **G02B 27/4222** (2013.01 - EP US); **G02B 27/4277** (2013.01 - EP US); **G03F 7/70241** (2013.01 - EP US); **G03F 7/70258** (2013.01 - EP US); **G03F 7/70825** (2013.01 - EP US)

Citation (search report)

- [XY] DE 19623418 A1 19971218 - ZEISS CARL JENA GMBH [DE]
- [YA] US 5636000 A 19970603 - USHIDA KAZUO [JP], et al
- [A] US 4676631 A 19870630 - KOSUGI MASAO [JP], et al
- [XA] US 4043644 A 19770823 - HUMPHREY WILLIAM E
- [X] WO 9613741 A1 19960509 - ULTRATECH STEPPER INC [US]
- [A] PATENT ABSTRACTS OF JAPAN vol. 010, no. 015 (P - 422) 21 January 1986 (1986-01-21)
- [PXA] PATENT ABSTRACTS OF JAPAN vol. 098, no. 010 31 August 1998 (1998-08-31)

Cited by

US7126765B2; EP1339099A4; DE102005019716A1; EP1279984A4; US7581305B2; US7009687B2; US7050148B2; WO03090265A1; WO02093257A3; US7145720B2; US7180667B2; US7382536B2; US6879379B2; US7170585B2; US7239447B2

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

**EP 0952490 A2 19991027**; **EP 0952490 A3 19991208**; **EP 0952490 B1 20040714**; **EP 0952490 B2 20110302**; DE 69918592 D1 20040819; DE 69918592 T2 20050728; DE 69918592 T3 20110728; JP 2000009980 A 20000114; JP 3031375 B2 20000410; US 2001038497 A1 20011108; US 6285512 B1 20010904; US 6563652 B2 20030513

DOCDB simple family (application)

**EP 99108057 A 19990423**; DE 69918592 T 19990423; JP 11341399 A 19990421; US 29656399 A 19990422; US 90259701 A 20010712